



ENERGY EFFICIENCY REVOLVING FUND DRAFT BUSINESS PLAN

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ENERGY EFFICIENCY REVOLVING FUND BUSINESS PLAN – FIRST DRAFT

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I. EXECUTIVE SUMMARY

The current situation in Armenia, as in the other countries of the Newly Independent States (NIS), makes it difficult to finance energy efficiency projects using the mechanisms that are commonly used in more developed financial markets.

This Business Plan describes the objectives of the Energy Efficiency Revolving Fund, its proposed organizational structure and mode of operation, and intended targets of the Fund. Its conclusions are derived from the research, analysis and workshops that have been conducted under the Armenia Energy Efficiency, Demand-Side Management and Renewable Energy Program (EERE Program). The conclusion of this work is that the Fund will be established as an independent non-profit organization working in combination with commercial banks to stimulate the market for energy efficiency by making low-cost financing available.

The financing provided by the Fund will be available to qualified end-users (residential, commercial, industrial and governmental) and private energy service providers. Potential borrowers will approach the Fund and participating commercial banks with a single project proposal or a portfolio of projects.

A not-for-profit organization will best match the objectives and the goals of the Fund. The Fund will be registered as an independent legal entity, governed by a Board of Trustees, with an Executive Director and staff to oversee the operation of the Fund. The governing body of the Fund, the Board of Trustees, will be established in the Fund Charter. Day-to-day operations will be the responsibility of the Executive Director and the regular staff. The staff will include both technical and financial experts to evaluate the proposed projects. The Fund's technical experts will evaluate the technical characteristics of each project to verify energy and cost savings. The Fund's financial experts will assess the borrowers' creditworthiness and financial health.

The Fund will blend higher cost financing provided through participating commercial banks (PCBs) with low cost financing provided directly by the Fund. At this stage, no banks have been asked to confirm their interest in participating in the Fund, however three local banks – Converse Bank, Armenian Development Bank and Ineco Bank have expressed their preliminary interest. Recently, lending officers from these three banks participated in a study tour to review similar funds in Lithuania and Bulgaria.

The Fund will require prospective borrowers to co-finance a minimum of 10% of a project's cost, with participating banks financing up to 40% and the Fund providing the remaining amount. The specific terms of the shared financing will be set by the Board of Trustees, and may be revised from time to time based on evolving market conditions and the Fund's performance. Maximum loan amounts and terms will also be established by the Board of Trustees.

It is anticipated that the participating banks will provide financing at commercial rates (currently about 20%), and the Fund will provide financing at a lower rate (5-6%) which is set to cover the Fund's administrative and loan default costs. By blending these two sources of financing, the borrower will pay a lower average interest rate that is affordable for the revenues generated by energy efficiency projects. The Fund will also provide longer term financing, up to ten years, lengthening the period in which the project can return the capital investment.

II. PURPOSE OF THE FUND

The current situation in Armenia, as in other countries of the Newly Independent States (NIS), makes it difficult to finance energy efficiency projects using mechanisms typically used in more stable financial markets. The poor economic situation, together with a lack of capital and a diversity of thinly capitalized financial institutions, creates a situation whereby energy efficiency projects cannot be financed. The funding that is available for credit-worthy consumers is very expensive (e.g., interest rates of 25%+) and is repayable over very short periods. In addition, infrastructure and maintenance investments have been severely cutback for the past ten years, leading to a deteriorating condition of the energy supply infrastructure and building stock.

At the same time, throughout much of the NIS, the weak enforcement of bill collections also jeopardizes the attractiveness of energy efficiency in that the consumer perceives no monetary gains from improved efficiency. Similarly, tariffs for utility provided energy services rarely align with the full costs of production and thus do not provide an accurate price signal for consumer decision-making on energy efficiency. As a result, the consumer economics are seriously distorted. Poor power quality (e.g., frequent outages, low frequency, large voltage swings) can also play havoc with some high efficiency equipment relative to the "low tech" alternative technology (such as a heat pump compared with electric resistance heating).

Combining the impact of the above factors with the typical energy efficiency barriers, such as poor consumer information, high transactions costs, so-called "split incentives" (sometimes known as the landlord/tenant problem), it is not surprising that the market penetration of efficient technologies is severely limited throughout the NIS.

The Energy Efficiency Revolving Fund will provide limited capital for cost-effective energy efficiency projects in facilities where commercial financing is not readily available and the economic benefits of energy efficiency are considerable. The Fund will provide financing at a low rate of interest to complement financing provided by commercial banks at normal rates. The qualified projects would have short to medium-term payback periods in order to capture the greatest near-term savings for the limited capital the fund will have available. The financing provided by the Revolving Fund will be of considerably longer periods than what local commercial banks are ready to offer. Based on the results of preliminary economic screening, it is likely that fuel substitution will be one of the major measures funded in the near-term. As the disbursed loans are repaid to the Fund, the capital will be used to pay administrative costs and reinvested in additional cost-effective energy efficiency projects.

Overall, the purpose of the Fund is to improve the efficiency of energy use in Armenia. Preference will be given to those projects for which traditional commercial financing is not available and that offer reasonable assurance that they will contribute to sustainable efficiency improvement. Additionally, given the nascent nature of energy efficiency service providers and manufacturers in Armenia, it is logical that the Fund give preference to those projects that use mostly local services and materials. In all instances, the projects that the Fund will financially support should be cost-effective from both the perspective of the overall energy system and the end-user. Sectors and end-uses currently relying on electricity will be the main target of the Fund, given the objective of reducing the need for replacement power from the shutdown of the Armenian Nuclear Power Station.

The Fund financing will be available to qualified end-users (residential, commercial, industrial and governmental) and private energy service companies (ESCOs). Specific consumers and the ESCOs will approach the Fund with a specific project proposal or a portfolio of projects. Loans from the Fund would likely be denominated and payable in dollars [this decision been made? I would have expected Dram-denominated loans would be more appropriate, given that by far the greater part of project costs are expected to be domestic]; in other words, the consumer would face the currency exchange risk, not the fund.¹

¹ As the fund grows, the fund may be in a position to hedge currency risk better than the borrowers and at that point could consider Dram loans and repayment.

The legal form of the organization of the Fund will be an independent, non-profit organization, governed by a Board of Trustees, which will oversee its operations. More detailed information about the Board of Trustees and the operations of the Fund is given in the later sections of this report.

III. APPLICABLE LEGAL FRAMEWORK

A detailed analysis needs to be completed of the legal framework that is applicable to the operations of the Fund. It is very important that the Fund comply with the existing laws and regulations governing its establishment and operations. This analysis should include the following identified laws:

1. The Law on Non-Bank Financial Institutions (2002) – This is a recently-passed law that will affect the Fund's operations.
2. The Civil Code (1999) – The Civil Code specifies the types of organization for commercial and non-commercial enterprises and the rules that govern different types of organizations.
3. The Law on Energy – This law identifies the authority of different government bodies that are engaged in the energy sector, and establishes the Armenia Energy Regulatory Commission's authority over energy tariffs.
4. Taxation and accounting Laws – The tax and accounting law should be researched to determine the expected tax liabilities and the financial reporting requirements for the Fund. An initial investigation has been done of the tax laws that would apply to the Fund. This information is included in Appendix A.
5. The Government Decree on Reforms in the Urban Heating (pending, expecting adoption in 2002) – Elements of the Heating Strategy will affect the viability and organization of specific projects in the residential sector. There may also be the potential for leveraging the Fund resources with government financing that is dedicated to encourage the decentralization of heating supply.
6. The Apartment Building Maintenance Law (2002) – This recently-enacted law establishes the authorities of condominium associations and other cooperative building management. This law will affect the viability of multi-family residential building projects.

It is recommended that legal counsel be engaged in the nearest future to provide legal advice on the proposed framework for the establishment and operation of the Fund.

IV. LEGAL STRUCTURE OF THE FUND

Due to the objectives and goals of the Fund, it has been decided that the best suitable legal structure would be to establish an independent, non-profit organization. The Fund should be registered as a new legal entity, with a Board of Trustees as established in its Charter. An Executive Director and professional and administrative staff will be hired. The highest governing body of the Fund will be the Board of Trustees. Day-to-day operations will be the responsibility of the Executive Director and the regular staff.

In the early phase of the Fund's operation, potential borrowers will require assistance in developing projects that will be acceptable to the Fund. Commercial banks will also need assistance in evaluating the financial viability of energy efficiency projects. It is recommended that a separate technical assistance component be provided in the Fund start-up period (one to two years) to help clients develop bankable projects that will be submitted to the Fund. In the longer run, the Fund's internal staff should be able to evaluate both the technical and financial merits of the proposals.

The Revolving Fund's operational and management structure is described below. Appendix B contains an organizational chart for the Fund.

An independent Board of Trustees (Board) will oversee the Revolving Fund.

No single organization or special interest should be allowed to gain control of the Board. The Board shall consist of 3-5 members who have a stake in the Fund's establishment and operation. Trustees shall represent the interests of sponsors, but may also include specialists who will provide expert advice to the Fund. The number of Board Trustees may be increased to include additional contributors to the Fund.

- ❖ **Sponsors/USAID** Major sponsors of the Fund will have a seat on its board.
- ❖ **GOA** One Board member will represent the Government of Armenia.
- ❖ **Technical Expert** One seat will be allotted to an energy efficiency expert from a qualified professional organization such as the Armenia Chapter of the Association of Energy Engineers.

The Executive Director will be a full-time employee of the Fund, and will inform the Board regularly on operations of the Fund.

The fund sponsors will serve as the founders of the fund and will thus be responsible for:

- a. Creating the Fund charter;
- b. Registering the Fund with the Armenian authorities;
- c. Establishing the initial amount of funding necessary to carry out the mission of the Fund;
- d. Recruiting other members to serve on the Board.

Upon appointment by the founders, the Board of Trustees will:

- a. Approve the rules, regulations, guidelines and criteria for funding as developed by the Fund Manager;
- b. Review and approve large loan applications for funding²;
- c. Review and approve the annual report and financial statements for the Fund;
- d. Develop and approve loan criteria including:
 - 1) Interest rates - Interest payments sufficient to cover the Fund's operating expenses and

² It may be necessary during the early period of Fund operation for the Board of Trustees to be responsible for approving all loan applications of any size to provide additional control against possible abuse in the use of the funds.

- loan defaults;
- 2) Repayment periods – Establish a maximum loan repayment period;
- 3) Remedies for non-payment of loans;
- 4) Minimum and maximum project size;
- 5) Loan limits and debt-to-equity requirements.

It is recommended that USAID, as the primary fund contributor but only one seat on the Board of Trustees, have veto power over approving any specific project, even against the will of the rest of the Board of Trustees. This measure will serve as an additional cushion against misuse of the funding by other Board members. This authority can be changed over time if additional contributors to the Fund are secured.

The Board of Trustees should reserve seats for new sponsors that may decide to join the Fund at a later date. It is suggested that the Trustee who is selected from the Government be from one of the government agencies directly involved in the technical and financial areas, e.g. the Ministry of Finance and Economy or the Energy Regulatory Commission. The specific roles and responsibilities of Board members, and the procedures for adding new members will be established in the Fund's Charter.

Fund Management: The staff of the Fund should consist of the following skill mix:

- ❖ **Financial:** The Executive Director, preferably an experienced banker, shall be the full time director of the fund's day-to-day activities. As time permits, the fund manager should solicit new sources of capital to grow the fund. The financial staff should also include a small team of financial experts/analysts who can assess prospective proposals.
- ❖ **Technical:** Certified Energy Manager(s) should be used to evaluate the technical merit of proposals and perform technical measurement and verification of projects as necessary. These persons can be hired as full-time Fund specialists, or contracted to evaluate technical proposals as they are submitted.
- ❖ **Legal:** A lawyer with appropriate experience in finance, contracts and banking should be engaged to advise the fund and be compensated on an "as needed" basis.
- ❖ **Clerical:** Clerical help will be hired to the extent required by the fund's level of activity.

The responsibilities and duties of the Fund management team include:

- a. Administration of loans;
- b. Review and processing of small applications for funding;
- c. Ensuring adequate measurement and verification of projects;
- d. Evaluating borrower performance;
- e. Overseeing disbursement of funds;
- f. Expediting the requests of, and reporting to, the Board of Trustees;
- g. Preparing the annual report, financial statements (in collaboration with the financial team) and rules/procedures of the fund subject to the approval of the Board of Trustees.

For the fund's first year, a minimum budget of USD 759,000 is recommended. This would cover the expenses involved in starting up the Fund, retaining a funds manager, clerical assistance, as well as limited technical, legal and financial expertise. Other start-up costs would include office space and equipment. With a budget of USD 759,000, there should be funds available for issuance of approximately USD 600,000 of loans. A recommended first-year budget is shown in the following table.

Exhibit 1: First Year Budget

Description	Amount in USD
Salary/Expenses for Executive Director	25,000
Office Rental and Utilities	12,000
Office Equipment and Supplies	7,000
Advertising & Public Relations	5,000
Technical, Financial and Legal Experts	30,000
Other Administrative Expenses	20,000
Contingencies (10% of loan amount)	60,000
Loans	600,000
Total	759,000

Following the initial organization, the fund management should seek additional contributions to increase the available financing to a much higher amount. It would be desirable to increase the Fund size to USD 10 million within a five-year period. At this stage, it is expected that growth of the Fund will be mainly financed by contributions of new sponsors and international donor organizations.

Ways to improve the Fund's financial performance during its start up include: 1) seeking Government of Armenia in-kind support such as the provision of office space, utilities and clerical help for the fund; and 2) financing the fund manager and required technical expertise through donor sponsored technical assistance.

The following are some of the important aspects of the fund's financing.

1. The Revolving Fund is designed to be non-profit, and is looking for a rate of return on its loans that will maintain its size in real terms.
2. Initial capital for the fund will be in the form of a grant from USAID.
3. The Fund's capital may be augmented at any time from any source. As the Fund becomes fully operational, there may be additional funding provided as grants or interest free loans by donor organizations (sponsors) such as the World Bank, EBRD, UNDP/GEF and the Armenian diaspora community. Donors could potentially be domestic, foreign or multilateral. However, the likelihood of attracting a domestic donor in the near term is extremely limited at present.
4. The Fund manager will actively seek new sponsors to grow the fund's capital.
5. The Fund's principal should be sustained by repayment of principal and interest from the project loans.
6. The Fund's administrative costs shall be covered from the general Fund and loan repayments.

V. SIMILAR FUNDS OPERATING IN ARMENIA

Currently, there are no funds in Armenia that are aimed at the energy efficiency sector. All funds operating in Armenia either disburse their funding directly or via intermediary institutions. Depending on the type, the funds have different levels of involvement in the day-to-day management of the financing process. The funds which directly grant loans need to maintain in-house knowledge and expertise in the lending process. The direct disbursement structure compared to intermediary involvement is also associated with higher costs for the fund's operation and greater liability for the risk of bad debts.

A common feature of direct financing structures is that the fund has greater freedom in making financing decisions. Direct financing allows establishing financing terms in accordance with the objectives of the fund. In addition, it may be difficult to ensure objectivity in the financing process of the intermediaries, and a risk associated with the liquidity and solvency problems of intermediary banks. There was a case when a fund lost 25% of their total disbursed amount due to bankruptcy of the administering bank (when the average default rate was about 4-5%). For the reasons given above, the Energy Efficiency Revolving Fund will be established as a non-bank financial institution (NBFI).

Compared to other funds currently operating in Armenia, the Energy Efficiency Revolving Fund will have a unique way of operation. It will not disburse loans in a standard sense but will take a longer-term equity interest in the projects, aiming to earn only such a rate of return as is necessary to cover its costs. In effect, the Fund takes its return from the project revenues that remain after the bank loan has been serviced. Section 11 of this report gives more information about the different financial models that were considered in the development of the Revolving Fund concept. Commercial banks will participate in the Fund also, but will be lending their own resources at their typical commercial rates. The Fund will guarantee repayment of the bank loan in the event that project revenues are insufficient to generate the scheduled repayments. The details of the operation of the Fund are given in the next section. By blending the higher commercial bank interest with the lower Fund financing, the borrower will experience an overall rate of interest paid for financing of around 5-6%.

Exhibit 2: Other Dedicated Funds Operating in Armenia

N	Name of the fund	Size (USD'000)	Sponsors	Target clients	Year of set up
1	Kamurj Microenterprise Development		Soros Foundation, USAID, Catholic Relief Service	Underprivileged women entrepreneurs	1998
2	Enterprise Support Fund	1,200	WB	Armenian businesses with foreign partners	N/A
3	Eurasia Foundation loan program	1,000	USAID, Swiss based Izmirlian Foundation	100% private companies	1995
4	Foundation of International Community Assistance	N/A		Small business without access to conventional financing	N/A
5	International Organisation for Migration-Revolving fund	N/A	UNDP, Japanese Government, UNHCR	Low income groups, refugees and returnees.	1997
6	OXFAM (Microcredit Program Development(MPD) and Small Credit Program(SCP))	1,100	OXFAM (UK)	Refugees or returnees	1994
7	United Methodist Committee for Relief (Aregak and Agricultural Credit Program(ACP))		USAID, USDA, USBPRM, UNHCR	Agricultural sector	1997
8	Small Enterprise Fund, World Vision	350	USAID,GTZ, Lincy, SB	Businesses - employment and income of vulnerable population	1997
9	Lincy Foundation, Entrepreneurial Lending Program		Lincy-California based charitable organisation	Borrowing group from one community	1997
10	Lincy Foundation, Armenian Foreign Investment Fund	6,000	Lincy-California based charitable organisation	Companies operating in the agricultural sector	2001
11	World Bank Lending Program		WB	Businesses in Yerevan	1996
12	Shorebank	600	USAID	Businesses with at least 51% Armenian equity and 80%private, exporters.	1999
13	International Finance Corporation	100,000	IFC, borrowings	Businesses with at least 51% of Armenian equity	2002(p)
14	European Bank for Reconstruction and Development, Multi-loan program	30,000	EBRD	Any business	2000
	World Bank Lending Program	11,650	WB	Manufacturing, service, agriculture	1996
	Shorebank	2,000	USAID	Agriculture	1999
	International Finance Corporation	20,000	IFC, borrowings	All sectors	2002(p)
	European Bank for Reconstruction and Development, Multi-loan program	8,600	EBRD	Mainly manufacturing	2000

VI. OPERATIONAL DESCRIPTION OF THE FUND

This section describes the steps that are involved for the borrower, Fund and participating banks in securing financing from the Fund. For each project that is considered by the Fund, there needs to be an equity contribution from the prospective borrower to cover a minimum of 10% of the overall project funding. Up to 90% of the project's cost may be borrowed, with the split between the commercial bank and the Fund determined based on each project's specific characteristics. The Fund can establish different criteria for different sectors. The process for applying to the Fund would be as described below. Appendix B contains a flow diagram that shows the process.

1. A potential client files a preliminary application for financing with the Fund's management. The application should include basic technical data and information about the proposed project(s), the energy efficiency measures, and the costs of each measure. It should also include information about the entity making the application. Further, the application should provide evidence that the consumer(s) covered by the proposed project(s) is in fact current on their utility payments.
2. The Fund's staff reviews the application and determines whether it merits further consideration based on the criteria established by the Board.
3. The application, together with the technical and financial information, is reviewed by the Fund's technical and financial staff to ensure that the project is sound. The proposal at this stage should contain all the necessary information for the Fund to make a sound decision, including a detailed analysis of the technical capabilities and thorough financial analysis.
4. If the requested funding is large (over USD 50,000), it is forwarded to the Board of Trustees for approval based on the recommendation of the Executive Director. The Board of Trustees should make their decision about approving or not approving a large project in the period of ten days.
5. If financing is to be provided in stages for a larger project or riskier investment (see Appendix B), the first stage of funding is identified, with the specific energy efficiency measures designated. The first stage, depending on size, is either approved by the Executive Director or the Board of Trustees based on the recommendation of the Fund's management. In the event that the staging option is not workable for the project under consideration, the Fund Manager determines the amount of project costs eligible for funding based on the criteria established by the Board of Trustees.
6. The Fund's management should obtain the evidence of availability of equity co-financing (equity participation) from the prospective borrower. The amount of co-financing is minimally 10% of the overall financing required.
7. The preliminary approved loan applications are submitted to one of the participating banks chosen by the qualified applicant. The participating bank carries out its own analysis of the loan application, together with the analysis of the collateral (if required by the bank), determines the period of the loan, applicable interest rate and the repayment schedule. The Fund's management will not have a right to interfere with the decision of the participating banks on loan approval, since the bank loans are granted from participating banks' own resources. However, the Fund management can provide information or clarification at the request of a bank.
8. The participating bank makes a final decision about financing its portion of the funding to the borrower, based on the conditions provided by the Fund's management.
9. If a participating bank rejects the loan application, the applicant may approach other participating banks.

10. Once a participating bank has agreed to fund a portion of the project, both the bank and Fund lending documents are signed. The bank loan is released first, and the Fund releases its funds on a needs basis, i.e. when the funding is actually needed by the borrower.
11. The borrower then completes the work using the funding provided and the borrower's own equity.
12. Following the completion of the work, the Fund's technical expert inspects the site and certifies that the work has been completed according to the loan agreement.
13. The performance of the energy efficiency measures are monitored by the ESCO, and reported to the Fund management regularly. The loan repayments, using the energy savings, are monitored by the Fund's financial staff. The Fund's technical experts only need to be involved if there is a disagreement between the ESCO and the client with regard to certifiable energy savings.
14. The client pays back the loan to the participating bank until it is fully repaid, makes repayments to the Revolving Fund. In effect, the Fund takes an equity position in the project since it takes its return from the project revenues that remain after the bank loan has been serviced. If there is a significant risk that the project will be unable to service its bank debt, the Fund should maintain a sufficient reserve to reduce this risk to an acceptable level.
15. After repaying the bank loan, the Revolving Fund and any other equity investors share out the remaining project revenues according to a pre-agreed schedule. The Revolving Fund will aim to achieve a rate of return sufficient to cover its costs and to offset any failed projects.

A staged approach to project financing can also be used where the risk for a proposed project is assessed to be higher than the Fund can accept. If there are multiple energy efficiency measures proposed in one facility or by one applicant, financing can be provided in stages. Appendix 2 describes the staging option in more detail, and gives the example of financing an industrial energy efficiency project in stages.

VIII. TARGETS OF THE FUND

The Revolving Fund is targeted directly at projects which are related to the installation and operation of energy efficient technologies in Armenia. There is a wide range of opportunities in Armenia to substitute various measures of energy consumption by much more efficient technological and technical solutions. Many of these opportunities are in switching from electricity to natural gas or renewable energy, which will also have a positive effect on the environment. The potential for electricity and natural gas efficiency improvements have been detailed in the Energy Conservation Plan (ECP) completed within the framework of the EERE Project. Below is the Exhibit demonstrating the energy efficiency potential in the electricity sector.

Exhibit 4: Energy Efficiency Potential for the Electricity Sector

Sector	Year 2000 Electricity Consumption	Year 2020 Electricity Consumption	Target Electricity Savings with Energy Efficiency	Target 2020 Electricity Consumption with Energy Efficiency
	GWh	GWh	GWh	GWh
Residential	1,786	2,675	670	2,005
Industrial	498	746	146	600
Commercial	332	500	75	435
Municipal	374	560	185	375
Government	415	622	122	500
Transportation	125	187	0	187
Agricultural	374	560	120	430
Export	250	373	0	373
Total Cons.	4,154	6,223	1,318	4,905

Transmission losses in the power sector are estimated to be 7%, distribution losses 12%, and commercial losses 10%, resulting in an overall loss of 29% from production to end-use consumption. When transmission and distribution losses are this high, any improvements in end-use efficiency have an "amplified" impact on the reduction of primary energy demand.

Similar analysis has been done in the ECP for the natural gas sector. Within each energy consuming sector considered, a list of potential energy efficiency projects has been defined. An overall estimate of the typical energy savings expected by type of project was made to determine the targets for energy savings in the year 2020. The following Exhibit summarizes the results.

Exhibit 5: Energy Efficiency Potential for the Natural Gas Sector

Sector	Year 2000 Natural Gas Consumption	Year 2020 Natural Gas Consumption	Target Natural Gas Savings with Energy Efficiency	Target 2020 Natural Gas Consumption with Energy Efficiency
	Million Cubic Meters	Million Cubic Meters	Million Cubic Meters	Million Cubic Meters
Residential	51	210	63	147
Industrial	170	697	139	558
Municipal	140	574	172	402
Government	835	1,253	63	1,190
Total Cons.	1,196	2,734	437	2,297

Below are the target sectors for activities of the Revolving Fund, together with short descriptions of some characteristics of the funding available for a particular sector.

EE/ESCO Customer Targets

Residential Sector

Residential buildings with high annual energy consumption and costs that have enough savings opportunities available to generate the necessary cash flow to pay for the project over the contract term are the best candidates for EE. To be financed through a loan, either the savings potential must be substantial or the residents themselves must take a higher equity stake in the project. Special emphasis in the residential sector should be made on the provision of heating and hot water supply.

Minimum characteristics for facilities that make good candidates for EPC:

- ❖ Annual energy costs in excess of USD 400 per residential unit
- ❖ Potential 25% in annual energy savings (USD 100 annually) per residential unit
- ❖ Stable and high (more than 80%) occupancy rate
- ❖ Relatively consistent energy use patterns over the past several years
- ❖ Ability to access energy consumption (utility) records for past three years
- ❖ Structurally sound facility conditions
- ❖ Evidence of utility bill payments for the previous 3 years

Most residential buildings will not fit the above profile. If residential projects are to be a major target of the Fund, a fee for service rather than an energy performance contracting (EPC) approach may be more feasible. Residents may also be required to take an equity position in the project by providing up-front contributions to the project.

Industrial Sector

Facilities with high annual energy consumption and costs that have enough savings opportunities available to generate the necessary cash flow to pay for the project over the contract term are the best candidates for EE. Most of the post-Soviet industrial companies had boilers installed, which are either not working or are extremely inefficient. Since many industrial companies have a supply of natural gas, it is possible to install highly efficient boilers. There is also a great potential in lighting improvement to turn it into an efficient source of energy savings. To attract an ESCO, the savings potential must be substantial. While some ESCOs are willing to implement EPC projects in smaller facilities, those projects are normally evaluated by ESCOs on a case-by-case basis.

Minimum characteristics for facilities that make good candidates for EPC:

- ❖ Annual facility energy costs in excess of USD 10,000
- ❖ Potential 15-25% in annual energy savings
- ❖ Stable future use and operation of the facility
- ❖ Relatively consistent energy use patterns over the past three years
- ❖ Ability to access energy consumption (utility) records for the past three years
- ❖ Structurally sound facility conditions

Commercial Sector

Commercial facilities may turn out to be one of the most attractive targets in implementing energy efficiency improvement projects. They generally have enough financial resources to meet the co-financing requirement as well as a high potential for generating stable cash savings on

such projects. Again, major emphasis here should be made on heating, cooling, supply of hot water, lighting and possibly weatherization.

Minimum characteristics for facilities that make good candidates for ESCOs:

- ❖ Annual facility energy costs in excess of USD 1,000 per facility
- ❖ Potential 25% in annual energy savings (USD 250 annually)
- ❖ Stable future use and operation of the facility
- ❖ Relatively consistent energy use patterns over the past three years
- ❖ Ability to access energy consumption (utility) records for the past three years
- ❖ Structurally sound facility conditions

Municipal Sector

The municipal sector has a wide range of possibilities including schools, hospitals, street lighting and drinking water pumping facilities with high annual energy consumption and costs. Those applications that have enough savings opportunities available to generate the necessary cash flow to pay for the project over the contract term are the best candidates for EE. However, it is important to note that the municipal sector at this time has a high risk of loan default. One of the reasons is that Municipalities themselves do not generate a high percentage of their own revenues, but rather rely on financing from the State budget. The most promising areas of the municipal sector seem to be schools and hospitals, particularly the latter which generate some revenues from services provided.

Minimum characteristics for facilities that make good candidates for EE projects:

- ❖ Annual School/Hospital energy costs in excess of USD 4,000 per facility
- ❖ Annual pumping station energy cost in excess of USD 15,000 per facility
- ❖ Defined areas where street lighting functions with no sodium lamps
- ❖ Potential 15 - 25% in annual energy savings (USD 1,000 – USD 4,000 annually)
- ❖ Stable future use and operation of the facility
- ❖ Relatively consistent energy use patterns over the past three years
- ❖ Ability to access energy consumption (utility) records for past three years
- ❖ Structurally sound facility conditions

This last condition is one that is difficult to find in the schools of Armenia. Deteriorating infrastructure and deferred maintenance make pure EE projects hard to find. To encourage EE projects in schools, the Fund should seek additional sources of grant funding to defray these costs, which do not contribute to energy savings.

Government Sector

Government building facilities may be another sector of the funding activities. However, it would be very difficult to ensure timely payments against the bank loan and Fund's financing. Participating commercial banks will also be reluctant to work with government facilities. Thus, even though the State sector facilities improvement is an option for the Fund to consider, it would be very difficult to put together and analytically support the viability of Government building facilities energy efficiency improvement.

Minimum characteristics for facilities that make good candidates for EPC:

- ❖ Annual individual facility energy costs in excess of USD 1,000 per facility
- ❖ Potential 25% in annual energy savings (USD 250 annually)
- ❖ Stable future use and operation of the facility
- ❖ Relatively consistent energy use patterns over the past several years
- ❖ Ability to access energy consumption (utility) records for past several years
- ❖ Structurally sound facility conditions

Agricultural Sector

Irrigation pumping facilities with high annual energy consumption and costs are the best candidates for EE. It is important to note that it is most likely that these projects would require larger amounts of investment and will have a longer payback periods compared to, for example, residential sector financing.

Minimum characteristics for facilities that make good candidates for EPC:

- ❖ Annual facility energy costs in excess of USD 4,000 per facility
- ❖ Potential 25% in annual energy savings (USD 1,000 annually)
- ❖ Stable future use and operation of the facility
- ❖ Relatively consistent energy use patterns over the past several years
- ❖ Ability to access energy consumption (utility) records for past several years
- ❖ Structurally sound facility conditions

The above sectors have been identified based on the analysis contained in the ECP. Pilot projects will be implemented under the EERE Program in the coming several months that will be used to test both the validity of the criteria and the savings available in different sectors. These results will be valuable in helping to establish the targets (both technologies and sectors) for the Revolving Fund.

IX. COMMERCIAL BANK PARTICIPATION

While the majority of the financing for the energy efficiency projects will be provided directly by the Fund, commercial banks will also be approached to provide a minority share of the financing for projects. The participating banks will provide their part of the project financing at their usual commercial terms. It is very important to engage the banks in this manner because:

1. Banks will provide additional financial analysis to verify the viability of proposals;
2. The banks will carry out strict monitoring of repayments, and establish some collateral requirement. This will ensure a higher level of responsibility on the side of the borrower;
3. Participating commercial banks will compete for borrowers under this project, which will inevitably drive down interest rates in the long run;
4. Potential borrowers (including ESCOs) will have an opportunity to build a credit history, which will help them to obtain loans independently later;
5. The longer-term aim of the Fund is to demonstrate to Armenian banks that energy efficiency projects are viable, and that banks can provide financing to this sector even without donors' support.

During preliminary talks with banks about the Fund, AEAI identified three local banks that may be interested in the Fund – **Converse Bank, Armenian Development Bank and Ineco Bank**. The representatives of these banks recently participated in the Heat Supply and Financial Mechanisms Study Tour to Lithuania and Bulgaria. These banks have shown a preliminary interest in participating in the activities of the Fund, but no final decision has been made.

It is very important to note that the banks practically have no risk in extending a loan to a potential borrower under the Fund since:

- a. The banks will generally have a high collateral requirement in order to cover any incurred losses;
- b. The Revolving Fund agrees to cover the balance of the payments that are to be made by the borrowers but are delayed due to insufficient cash generation at the beginning of the project period;
- c. The loan applicants and their proposed projects have been carefully examined and analyzed by technical experts to assess the reasonableness of their potential energy savings;
- d. The participating bank finances a minority of the overall funding amount required, with the borrower and the Fund taking a majority share.

The banks will have an opportunity to disburse loans with a low level of risk and still charge their commercial interest rates. However, considering the downward trend of interest rates in the Armenian economy, it is vital to come to an agreement with the banks to extend loans on a flexible interest rate basis, as opposed to a fixed rate for several years.

The banks that should be included in the project as participating banks should qualify based on the conditions and requirements set by the Board of Trustees. Although three local banks have expressed interest, the number of participating banks is not limited artificially. In addition, the three mentioned banks might not meet the qualification requirements that will be set by the Board of Trustees at a later date.

X. SUMMARY TIMETABLE OF ACTIONS

Below is the timetable of actions necessary to establish the Revolving Fund and begin operations.

N	Action	Timing
1	Legal research that might affect the establishment or operation of the Fund	6 weeks
2	Selection of the Board Members	1 month
3	Development of the Fund Charter and bylaws	1 month
4	Registration of the Revolving Fund	15 days*
5	Recruitment and hiring of the Executive Director	2 months*
6	Setting criteria for banks and recruitment of the participating banks	2 months
7	Negotiating contracts with the selected banks	1 month
8	Establishing EE target sectors and selection criteria	1 month
9	Hiring and training of the staff for the new fund	3 months*
8	Designing the loan documentation and detailed operational procedures manual	2 months*
10	Creation of the panel of technical experts	1 month*
11	Starting the operations of the Fund (pilot loan applications)	10 days
12	Setting up the certification procedure for technical experts	2 months

* These activities can be carried out simultaneously with other activities.

XI. FUND'S FINANCIAL MODEL

The purpose of this section is to provide a summary of the arithmetical arguments behind different loan Fund models. Models are compared on the basis of the potential impact the Fund and on the ability of the Fund to revolve. The impact of the fund is expressed in terms of the threshold value of simple payback period (SPBP) below which a project becomes viable. The higher this threshold SPBP, the greater the impact of the fund.

NOTES / ASSUMPTIONS:

1. Years to revolve equals the number of years for the undiscounted repayments to the fund (net of operating costs and offsetting project failures) to exceed the size of the original investment by the fund;
2. All the following models do not consider cost-sharing – i.e. the project is financed purely by a combination of a local bank loan plus investment from the Fund. Since 10% cost-sharing does play just a role of a measure for increasing the responsibility of the borrower, consequently it was not included in the description of the financial models. Since some cost-share is contributed by project players who expect no *direct* return from the project (for example, a householder might be willing to share the costs purely in the expectation that the project will result in the value of their apartment increasing) then this is represented in the analysis below as a shortening of the simple payback period (SPBP). However, if cost-sharing participants expect a non-zero financial rate of return, this effectively becomes an equity investment, and must be dealt with as under Model 2 below;
3. As to the current (shown above) operations description, the Fund's funding is assumed to be 6% percent, i.e. low interest. This will, however, "eat up" the Fund amounts over time. From financial perspective, low interest payable on the Fund's finances means shorter payback periods. To show what would happen if the Fund's amounts are not low-interest, each of the models below is evaluated under two different scenarios:
 - (a) **Assuming the Fund remains at USD 1 million**, its administrative costs are likely to be at about 15%, and project failure rates are likely to be about 1% per year (i.e. 10% over the 10-year lifetime of the projects). The Fund therefore needs to earn a **16% rate of return** to sustain itself.
 - (b) **Assuming the Fund is sufficiently large** that its annual administrative costs are 5%, and project failure rates remain at 1% per year, the Fund therefore needs to earn a **6% rate of return** to sustain itself.
4. Assuming current conditions where banks loans are available at 20% over 2 years, any project with a SPBP < 1.53 years would be able to service a pure bank loan, with no involvement of the Fund.

Model 1 – the Fund provides loans with a grace period equal to the period of the commercial loan

Under this model, the local bank is assumed to lend at 20% over 2 years, and the Fund provides a loan with a grace period of 2 years. Because it offers a grace period, the Fund needs to charge an *actual* rate of interest that is substantially higher than the required rate of return. The actual rate charged depends on the loan period.

(a) Fund rate of return = 16%

If the Fund requires an *effective* rate of return of 16%, and is offering a grace period of 2 years, the *actual* interest rate it has to charge is 27% for a loan period of 7 years, up to 36% for a loan period of 3 years. The table below shows the required project SPBP for different combinations of Fund contribution and Fund loan period.

		Period of loan from Fund (in addition to grace period)		
		3	5	7
Interest rate that Fund has to charge in order to earn an effective rate of return of 16%		36%	30%	27%
Share of project cost coming from Fund	20%	1.91	1.91	1.91
	40%	2.55	2.55	2.55
	60%	2.78	3.82	3.82
	80%	2.09	3.04	3.76

By providing finance over 5 to 7 years (plus the 2 year grace period) and by achieving the optimum apportioning of project costs between bank and Fund, it is possible for projects with a SPBP as long as 3.82 years to be viable under this model. However, the grace period has the effect of lengthening the time it takes the Fund to revolve. Where the loan from the Fund is provided over 7 years, the time taken for the Fund to revolve is approximately 5.5 years.

(b) Fund rate of return = 6%

If the Fund requires an *effective* rate of return of 6%, and is offering a grace period of 2 years, the *actual* interest rate it has to charge is 9% for a loan period of 7 years, up to 13% for a loan period of 3 years. The table below shows the required project SPBP for different combinations of Fund contribution and Fund loan period.

		Period of loan from Fund (in addition to grace period)		
		3	5	7
Interest rate that Fund has to charge in order to earn an effective rate of return of 6%		13%	10%	9%
Share of project cost coming from Fund	20%	1.91	1.91	1.91
	40%	2.55	2.55	2.55
	60%	3.82	3.82	3.82
	80%	2.97	4.68	6.21

By providing finance over 7 years (plus the 2 year grace period) and by achieving the optimum apportioning of project costs between bank and Fund, it is possible for projects with a SPBP as long as 6.21 years to be viable under this model. However, for a loan period of 7 years, the time taken for the Fund to revolve is approximately 8 years under this model.

Model 2 – equity investment by the Fund (or by other players) for the duration of the project, combined with a local bank loan

Under this scenario, the Fund's investment in the project is more equity-like in character. The return to the Fund is variable, falling to low levels (or even to zero) while the commercial loan is being paid off, but rising to high levels thereafter. The Fund carries virtually all the risk associated with the ability of the project to generate an adequate cash flow. Because of the additional security resulting from the Fund's willingness to carry most of the risk, it is assumed under this scenario that the local banks would be willing to lend at 18% over 3 years, as they have indicated that they would do in the presence of a guarantee.

(a) Fund rate of return = 16%

The table below shows the relationship between equity contribution and the threshold SPBP above which projects are viable.

Equity contribution	Required SPBP	Years to revolve
20%	4.6	6.3
40%	4.7	6.2
60%	4.7	6.1
80%	4.8	5.9

Note that if equity is contributed by other players who are satisfied with a rate of return of less than 16%, the required SPBP will be correspondingly longer. Conversely, if other equity investors require greater than 16% rate of return, this will shorten the threshold SPBP.

(b) Fund rate of return = 6%

Assuming the Fund needs to earn a rate of return of 6%, and assuming a bank loan of 18% over 3 years, the table below shows the relationship between equity contribution and threshold SPBP.

Equity contribution	Required SPBP	Years to revolve
20%	6.0	8.3
40%	6.3	8.1
60%	6.6	8.0
80%	7.0	7.8

Note that if equity is contributed by other players who are satisfied with a rate of return of less than 6%, the required SPBP will be correspondingly longer. Conversely, if other equity investors require greater than 6% rate of return, this will shorten the threshold SPBP.

CONCLUSIONS

Model 1 above is felt to be weak, because of the long time it takes the Fund to revolve relative to the impact it has on the threshold SPBP. Unless finance is provided over seven years (in addition to the assumed two-year grace period) and the Fund covers a very high fraction of the project cost, the impact of this model on lengthening the threshold SPBP is small. However, the time taken for the Fund to revolve is 5.5 years for an effective rate of return of 16%, up to 8 years for an effective rate of return of 6%. Also, since the effective rate is so high after the grace period.

The most effective model appears to be providing a high proportion of the project costs in the form of an equity investment (Model 5). While providing an equity investment from the Fund has slightly less impact on the threshold SPBP, it has two significant advantages. Firstly, for projects where the SPBP is short compared to the threshold, it is possible for the Fund to revolve very rapidly, so making resources available to invest in further projects. Secondly, it is likely to have a more positive stimulatory effect on the local banks, as their involvement in this model takes the form of providing loans under normal commercial conditions, rather than merely administering the Fund's resources.

A clear conclusion that can be drawn is the necessity to reduce the percentage operating costs of the Fund by enlarging it. In order to sustain itself, the Fund needs to earn a rate of return large enough to cover its operating costs as well as to offset the costs of projects that fail. With the Fund at its current size, the operating costs are likely to be in the region of 15%, and the rate of return it would need to earn is so high that the Fund is able to have relatively little impact. At best, the Fund would extend the range of viable projects to include those with a SPBP of up to 4.8 years. However, if the Fund were increased in size such that its operating costs were brought down to around 5%, projects with a SPBP as long as 7.3 years could be made to be viable.

APPENDIX A

TAX IMPLICATIONS FOR FOUNDATIONS

According to the Civil Code of the Republic of Armenia, a foundation (NGO) is a commercial organization, a legal entity, which acts in accordance with its Charter. This type of organization has no membership. Voluntary investments made to the foundation by its owners (legal entities or individuals) determine the ownership of the Fund.

As separate legal entities, foundations have the following tax liabilities:

- It acts as an agent for Income Tax purposes. This is to say that it should calculate the Income Tax payable from the incomes paid to individuals, withhold these amounts and transfer them to the State budget. It is also necessary to submit appropriate reports about the incomes paid to individuals and the Income Tax withheld to Tax authorities on a quarterly basis.
- A foundation is viewed as a taxpayer for Property Tax purposes if it has taxable property, which is buildings and transportation means in the foundation's ownership.
- It will be viewed as a Land Tax payer if it has a plot of land in its ownership or permanent usage
- A foundation is liable for Social Security obligatory payments both on its own payroll budget and on amounts received by hired (contracted) employees, withholding and transferring to the State Social Security Fund 3% of the amounts,

Generally, it is seldom seen that a foundation carries out commercial activities. Instead, they usually establish separate entities (subsidiaries), which conduct "for-profit" operations. So, it is not typical for foundations to receive revenue type incomes. However, if commercial activities are carried out by a foundation and profits are generated, it will be necessary to calculate and to pay the Profits Tax and Value Added Tax (VAT).

Below are the extracts from the Civil Code (articles 123 and 124), which outline some terms regarding funds in Armenia.

ARTICLE 123. BASIC PROVISIONS ON FUNDS

1. A fund is a non-commercial organization not having membership, founded by citizens and/or legal persons on the basis of voluntary property contributions, pursuing social, charitable, cultural, educational, and other socially-useful purposes.

2. Property transferred to the fund by its founders (or founder) is in the ownership of the fund. A fund shall use property for the purposes defined in its charter.

3. A fund is obligated to publish reports annually on the use of its property.

4. The founders are not responsible for the obligations of a fund created by them and the fund is not responsible for the obligations of its founders.

5. The procedure for managing a fund and the procedure for forming its executive bodies are determined by its charter approved by the founders.

6. The charter of a fund, in addition to the matters indicated in Paragraph 2 of Article 55 of the present Code, must contain: the name of the fund, including the word "fund," information on the purposes of the fund; indication of the executive bodies of the fund, including the trusteeship board exercising supervision over the activity of the fund, on the procedure for appointing official persons of the fund and discharging them, on the procedure for disposition of the property of the fund in case of its liquidation.

7. The peculiarities and legal status of individual types of funds, in particular of charitable organizations are established by the present Code and other statutes.

ARTICLE 124. AMENDMENT OF THE CHARTER AND LIQUIDATION OF THE FUND

1. The charter of the fund may be changed by the executive bodies of the fund, if the charter provides the possibility of changing it by such a procedure.

If the preservation of the charter in unchanged form entails consequences that would have been impossible to foresee at the founding of the fund, and the possibility of changing the charter is not provided in it, or the charter is not changed by the authorized persons, the right of making changes shall belong to a court upon request of executive bodies of the fund or of the body authorized by the charter of the fund to exercise supervision of its activity.

2. A decision on the liquidation of a fund may be taken only by a court upon request of interested persons.

A fund may be liquidated:

- 1) if the property of the fund is insufficient for conducting its purposes and an expectation of receiving the necessary funds is unrealistic;
- 2) if the purposes of the fund may not be attained, and the necessary changes of purposes of the fund may not be made;
- 3) in case of deviation of the fund in its activities from the purposes provided in the charter;
- 4) in other cases provided by a statute.

3. In case of liquidation of the fund, its property shall be put to the purposes indicated in the charter of the fund and, if this is impossible, to the state fisc.

APPENDIX B

EXHIBIT 1: PROPOSED ORGANIZATIONAL DIAGRAM OF THE RELATIONSHIP BETWEEN THE VARIOUS PARTIES INVOLVED IN THE FUND'S OPERATION

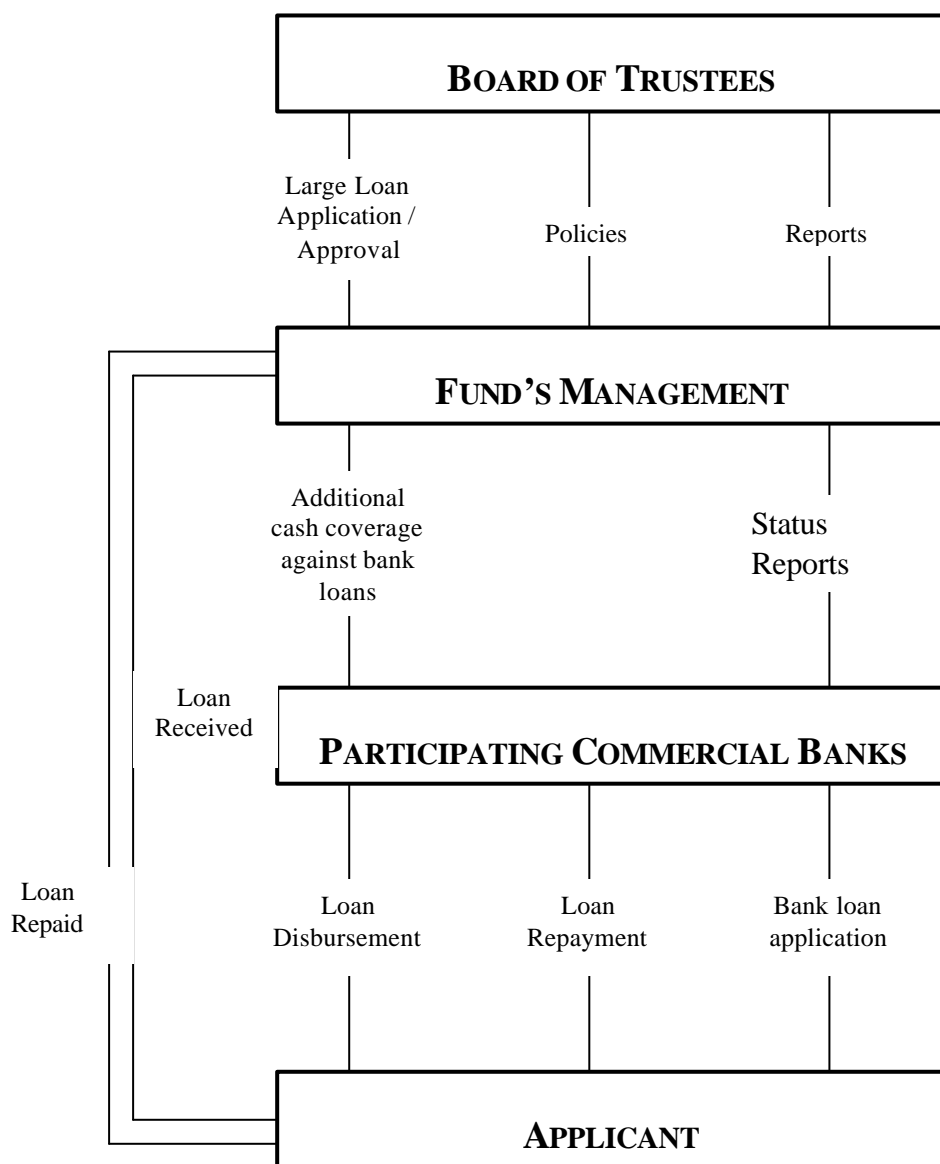
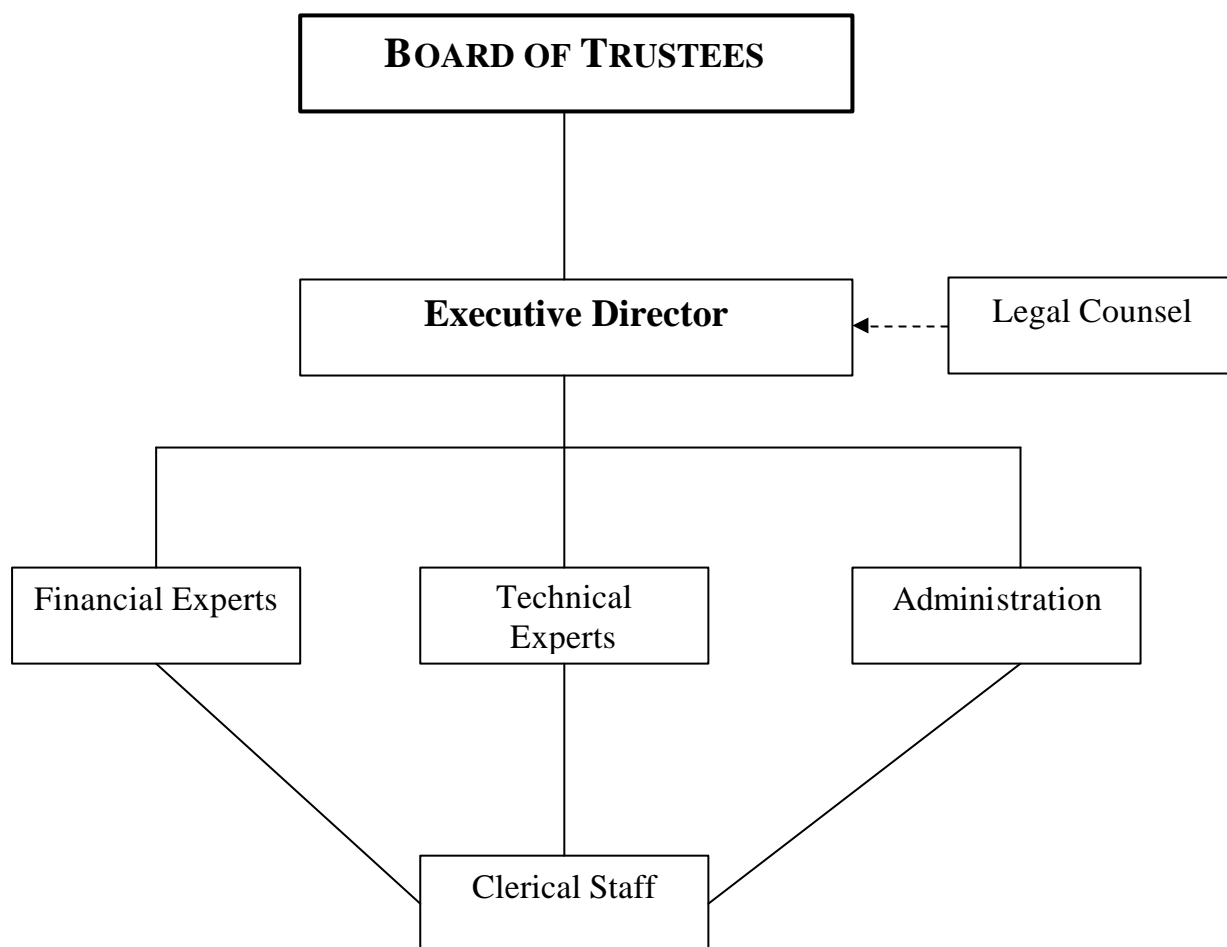


EXHIBIT 2: PROPOSED ORGANIZATIONAL STRUCTURE OF THE FUND

APPENDIX C.

STAGED APPROACH TO EE PROJECTS FINANCING

Where a comprehensive package of energy efficiency measures is being proposed, it is often possible to improve greatly the bankability of the package by adopting a phased approach to implementation. Those components of the package that have the fastest payback time are implemented first, financed partly by a bank loan. The cash benefits from this first phase are held in a reserve account until the loan is paid off, by which time their accumulated value is sufficient to significantly reduce the size of the loan needed to implement the second phase, consisting of measures with longer payback periods. Furthermore, the successful servicing of the initial, relatively small loan enables the client to build up a good relationship with the bank, which should allow more favorable loan conditions to be negotiated for the subsequent phases.

The following hypothetical example illustrates the phased approach in action:

Assumptions: A project is proposed comprising a comprehensive package of energy efficiency measures, costing a total of \$100,000 and yielding cash benefits of \$25,000 annually. The client is able to contribute a maximum of \$2,000 in cost share, with the remaining \$98,000 needing to be borrowed from a bank. The most favourable loan terms available are an annual interest rate of 20%, and a maximum loan period of 18 months.

Clearly the project in this form is unlikely to be viable, since the loan repayments would be \$6,270 per month, while the project generates monthly cash benefits of only \$2,083.

Phasing of measures:

Closer analysis of the project reveals that the proposed measures can be divided into three categories with short, medium and long payback periods. These are detailed as follows:

Measures	Cost	Annual cash benefit
Basic repairs and weatherization of doors and windows, insulation of roof space	\$10,000	\$11,000
Replacement of old boiler, installation of heating controls and TRVs	\$40,000	\$9,000
External cladding of walls, installation of solar collector to pre-heat water	\$50,000	\$5,000
TOTAL	\$100,000	\$25,000

Using the client's cost-share contribution of \$2,000 the first set of measures can now be implemented by borrowing only \$8,000. The monthly repayments are therefore \$512 while the monthly cash benefits are \$917. The surplus of \$405 is accumulated in a reserve account until the 18-month loan is paid off, at which time it has amounted to \$7,920 which can be used to pay for the second phase.

The second phase can therefore be implemented by borrowing only \$32,710. Furthermore, is is assumed that the the good relationship built with the bank means it is now willing to lend for 30 months, at only 18%. The monthly repayments on this loan are therefore \$1,341 while the

monthly project cash benefits are now \$1,667 (\$750 from the second phase measures plus the full \$917 from the first phase measures). The reserve account therefore receives a monthly payment of \$326 which, when the 30-month loan has been paid off, will have accumulated to \$9,780.

If desired, the third phase of measures can now be implemented with a loan of only \$40,220 (although it may be decided that these measures are not sufficiently cost-effective to be worth considering). Again, is assumed that the bank is willing to soften its terms somewhat, and offers a loan over 36 months at 18%. Given that the monthly repayments are \$1,427 and the total monthly project cash benefits are now \$2,083, this loan can be comfortably serviced.

Clearly, this greatly simplified example overlooks a number of complexities. Perhaps the most important of these is the fact that the payback periods of the different measures are not independent of each other. For example, once the overall cost of heating has been reduced by the installation of a new heating system in the second phase, the monthly benefits of the first phase measures are actually somewhat smaller.

However, the general principle of the phased approach remains valid, providing a means whereby an otherwise unbankable project can be made feasible. To work effectively, it clearly requires that a project can be split into distinct components, and that one of these components has a very rapid payback period. Experience shows that this is generally true: in the residential sector, simple weatherization often yields payback periods of less than one year, while in the industrial sector the same is usually true for repairs to leaks in compressed air and hot water distribution networks.